

Electronic-Key-System EKS



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Logistics center in Leinfelden-Echterdingen



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EUCHNER GmbH + Co. KG is a world-leading company in the area of industrial safety technology. EUCHNER has been developing and producing high-quality switching systems for mechanical and systems engineering for more than 60 years.

The medium-sized family-operated company based in Leinfelden, Germany, employs more than 600 people around the world.

16 subsidiaries and other sales partners in Germany and abroad work for our international success on the market.

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A look into the past shows EUCHNER to be a company with a great inventive spirit. We take the technological and ecological challenges of the future as an incentive for extraordinary product developments.

EUCHNER safety switches monitor safety doors on machines and installations, help to minimize dangers and risks and thereby reliably protect people and processes. Today, our products range from electromechanical and electronic components to intelligent integrated safety solutions. Safety for people, machines and products is one of our dominant themes.

We define future safety technology with the highest quality standards and reliable technology. Extraordinary solutions ensure the great satisfaction of our customers. The product ranges are subdivided as follows:

- ▶ Transponder-coded Safety Switches
- ▶ Transponder-coded Safety Switches with guard locking
- ▶ Multifunctional Gate Box MGB
- ▶ Access management systems (Electronic-Key-System EKS)
- ▶ Electromechanical Safety Switches
- ▶ Magnetically coded Safety Switches
- ▶ Enabling Switches
- ▶ Safety Relays
- ▶ Emergency Stop Devices
- ▶ Hand-Held Pendant Stations and Handwheels
- ▶ Safety Switches with AS-Interface
- ▶ Joystick Switches
- ▶ Position Switches



Electronic-Key-System EKS

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Use

With the **Electronic-Key-System EKS**, it does not matter if a password is forgotten. **EKS** provides electronic access management on PCs and control systems.

Nowadays access rights are usually controlled by the issue of passwords. In practice, however, this often leads to unauthorized changes to a system.

This is where the **Electronic-Key-System** can be put to optimal use: in comparison to the issue of a password, considerably more responsibility is assigned to the owner of an Electronic-Key.

The Electronic-Key provides **protection against unauthorized access** to control and visualization systems. Often only specific people have permission to change the system parameters on critical systems. This is the ideal application for **EKS**.

In a typical application, the user has an **access right at a specific level** via the Electronic-Key.

An example:

- ▶ Level 1: Start and stop installation
- ▶ Level 2: Change process parameters
- ▶ Level 3: Manage Electronic-Keys

The Electronic-Keys are available in different colors with identical functionality. The colors can be used, for example, to indicate the different levels of access rights.



Key management using the Electronic-Key-Manager

The Electronic-Keys can also be managed on separate workstations using the **Electronic-Key-Manager (EKM)** software.

Along with access rights or personal data, it is also possible to save process-related information, e.g. recipes or parameters for the machine control system on the Electronic-Key and in the database, and to retrieve the data in production.

System overview

EKS is an **inductive Identification System**. The EKS devices are available in the version as a compact Electronic-Key adapter with integrated electronics or the modular version with Electronic-Key adapter and electronics in a separate housing.

Thanks to the special design of the Electronic-Key adapters, the Electronic-Key can be placed on the installation during operation.

EKS devices are **read/write systems** with electronics for the inductive bidirectional interface to the transponder and interface electronics.

Integrated into the Electronic-Key in the form of a robust tag are a memory chip and an antenna (transponder).

The power supply for the transponder and the data are transferred **contactlessly** between the Electronic-Key adapter and the Electronic-Key.

▶ Transponder without battery

The data carrier in the Electronic-Key is equipped with a combined read/write and fixed-code memory:

- ▶ 116 bytes E²PROM (programmable) plus 8 bytes ROM (serial number)

Device variants with the following interfaces are available for system connection:

- ▶ Serial RS232/RS422, switchable
- ▶ USB
- ▶ Ethernet TCP/IP
- ▶ PROFIBUS DP
- ▶ PROFINET IO

The Electronic-Key adapters with serial interface and Ethernet TCP/IP interface can be connected to a PC or a control system. The advantage of Ethernet is that **EKS can be physically remote**. The Electronic-Key adapter with USB interface is particularly suitable for connecting to a PC. The major **advantage is that power is supplied via the USB connection**.

The devices with PROFIBUS DP and PROFINET IO interface are preferably used on control systems. Also in these variants, the **EKS** can be used remotely from the control system, e.g. at assembly workplaces.

All the advantages at a glance

With **EKS**, very **fast log-on** is possible without the use of a password even on systems without a keyboard. In addition, it is sensible to program the application to permit system access only as long as the Electronic-Key is positioned in the Electronic-Key adapter. Then when the Electronic-Key is removed, e. g. access to specific functions on the system is automatically inhibited.

A major advantage is the **flexibility of the system**:

- ▶ Easy assignment and alteration of the access rights level
- ▶ Access for lost Electronic-Keys can be disabled
- ▶ Fast assignment of additional Electronic-Keys


Along with the access rights level, the name of the user can be programmed into the Electronic-Key read/write in plain text, for example.

For **quality assurance** in accordance with ISO 9000, it is possible to log accesses and changes when using **EKS**.

The **EKS** system also makes it possible, for example, to log product parameters and operator entries in accordance with FDA standard 21 CFR part 11. **EKS** can be used in this context as an **electronic signature** for personal confirmation of work steps.

On EKS devices that are used as pure read stations on the production line, **write protection can be set using a DIP switch** to increase the protection against tampering.

Approvals

The EKS devices are certified in accordance with  (UL file number E240367).

Integration

The user is responsible for organizing the programming of the application, integration in an overall system and assignment and use of the freely programmable memory in the Electronic-Key.

Interfacing of the **EKS** Electronic-Key adapters with serial, USB or Ethernet TCP/IP interface to the user's PC application is supported by optionally available **ActiveX® modules**¹⁾ (can be used if Microsoft Windows®¹⁾-based user programs support ActiveX®). **EKS** can thus be used, for example, in conjunction with process visualization software. Data communication is in accordance with transfer protocol 3964R or TCP/IP. The **ActiveX® module** is used here as a protocol driver.

To operate the EKS Electronic-Key adapter with USB interface on a PC, USB driver software must be installed. The USB interface is designed as a virtual serial COM port. The communication over the interface is exactly the same as for the device with serial interface. Therefore, devices with serial interface and USB interface are interchangeable with regard to software applications.

If a database is established to use the unique Electronic-Key serial number, it is not imperative to write to the Electronic-Key. As an option, the **Transponder Coding** software can be used for straightforwardly writing and reading the Electronic-Key on the PC. Furthermore, the **Electronic-Key-Manager**, a flexible software package, is available for **programming and managing the Electronic-Keys** on the PC including database for the Electronic-Keys. The freely programmable memory on the Electronic-Key can be structured exactly as required using **EKM**.

Commissioning and system integration is significantly simpler using the EKS with PROFIBUS and PROFINET interface. The address can be set using DIP switches. The **EKS** is integrated in the software using the GSD files and the data are available in the control system's input area immediately after configuration.

Version FSA

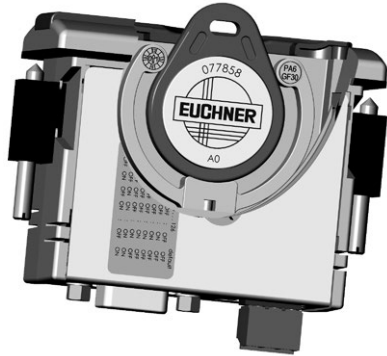
As an alternative, the devices with USB, Ethernet TCP/IP, PROFIBUS and PROFINET interface are available in the **FSA (For Safety Applications)** version. To solve the widespread problem of tampering with safety guards, **EKS** has been expanded for safety-related applications in conjunction with **operating mode** selection. In this case, trained personnel are specifically authorized to perform critical setup and maintenance work in a special, hazardous operating mode.

This version has additional switching contacts that can be utilized to **form a safe shut-down signal**. For this purpose a safe evaluation must be included downstream. The **EKS FSA** can then be used for **safety-relevant tasks**. The machine is reset to a safe operating mode by removing the Electronic-Key.

1) Microsoft Windows® and ActiveX® are registered trademarks of Microsoft Corporation

Compact version of the EKS Electronic-Key adapter

Here, the Electronic-Key adapter and the electronics form a unit with the interface. In operation, the Electronic-Key is inserted into the Electronic-Key adapter and is held in place by a spring clip.



The Electronic-Key adapter can be installed in any control panel with a standard cut-out of 33 mm x 68 mm in accordance with DIN 43700.

Due to the transfer of energy and data without using any contacts, this Electronic-Key adapter is designed with a high degree of protection suitable for industry from the access side. It is fastened by means of screw clamp elements from the rear side of the panel to exclude unauthorized tampering from the operator side.



The special features and advantages of the **compact Electronic-Key adapter**:

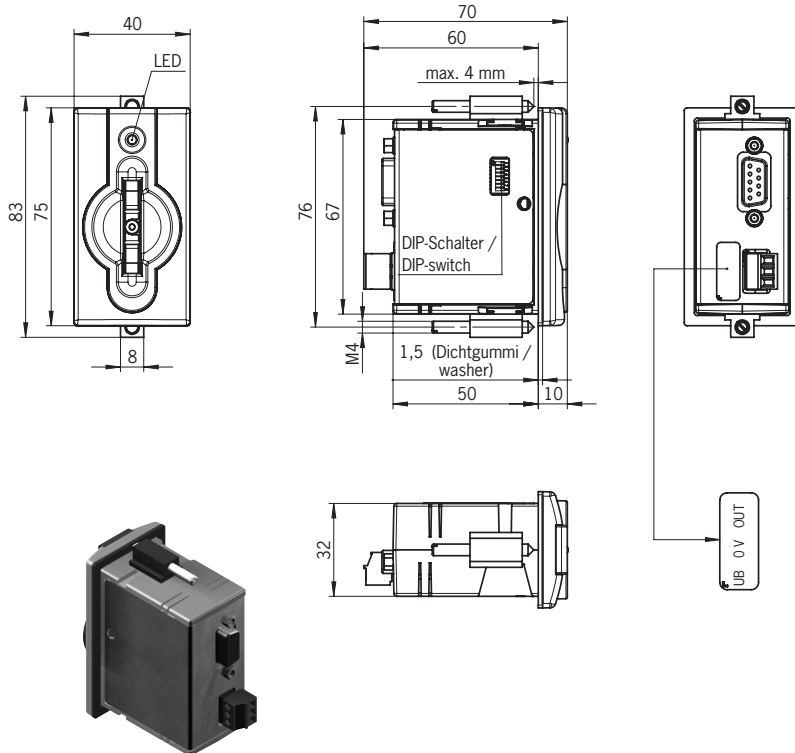
- ▶ Electronic-Key adapter and electronics in one housing
- ▶ Electronic-Key is inserted and retained by spring clip
- ▶ Very reliable retention of the Electronic-Key, even if there is heavy vibration
- ▶ Protection against tampering: fastened using screw clamp elements from rear side of the panel
- ▶ Robust housing for use in harsh environments
- ▶ Flat seal all around under mounting surface
- ▶ Degree of protection: IP 65, IP 67 (installed)

Electronic-Key adapter with serial interface



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to PC. Interfacing via ActiveX® module in Windows®
- ▶ Connection to control system or microprocessor. Interfacing via programming based on the 3964R protocol

Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529	IP 67 in mounted condition			
Ambient temperature at $U_B = DC 24 V$	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Connection for power supply	Plug-in connection terminal, 3-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)	20	24	28	V DC
Current consumption I_B			100	mA
Interface, data transfer				
Interface to the PC or to the control system	Serial RS232 / RS422 (selectable via DIP switch)			
Transfer protocol	3964R			
Data transfer rate	9.6			kbaud
Data format	1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit			
Connection for serial interface	Socket Sub-D 9-pin			
Cable length RS232			5	m
Cable length RS422			1000	m
LED indicator	Green: "Ready" (in operation) Yellow: "Electronic-Key active" *			

* The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.

Ordering table

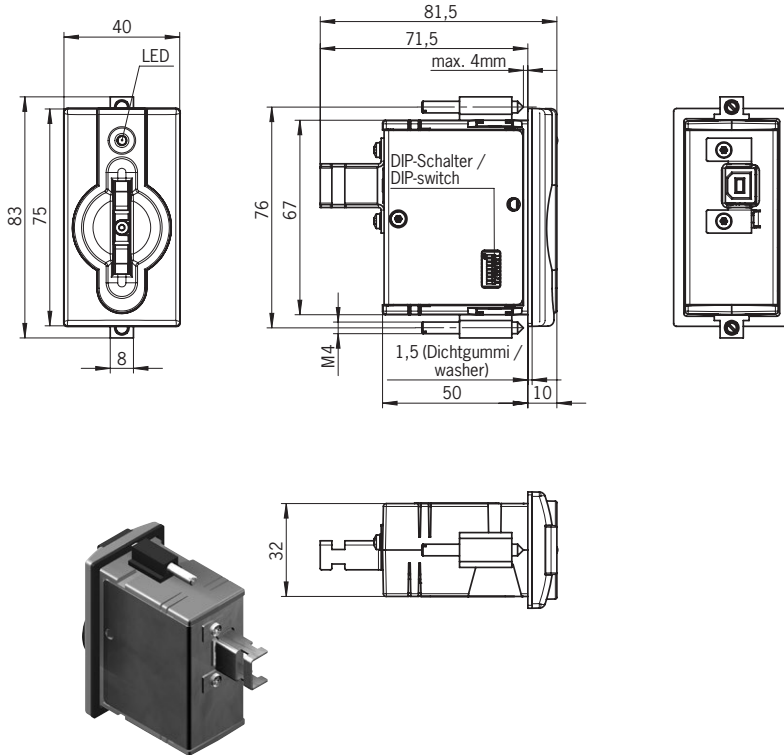
Designation	Item	Order no.
Electronic-Key adapter with serial interface	EKS-AISX-G01-ST09/03	084750

Electronic-Key adapter with USB interface



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to PC. Interfacing via ActiveX® module in Windows®
- ▶ Virtual serial COM port. Communication identical to EKS serial

Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529	IP 67 in mounted condition			
Ambient temperature	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Power supply	Via USB			
Current consumption I _B			100	mA
Interface, data transfer				
Interface to the PC	USB full speed (USB 1.1 and USB 2.0 compatible)			
Transfer protocol	3964R			
Data transfer rate	9.6			kbaud
Data format	1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit			
USB interface connection	Type B socket			
Cable length			3	m
LED indicator	Green: "Ready" (in operation) Yellow: "Electronic-Key active" *			

* The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.

Ordering table

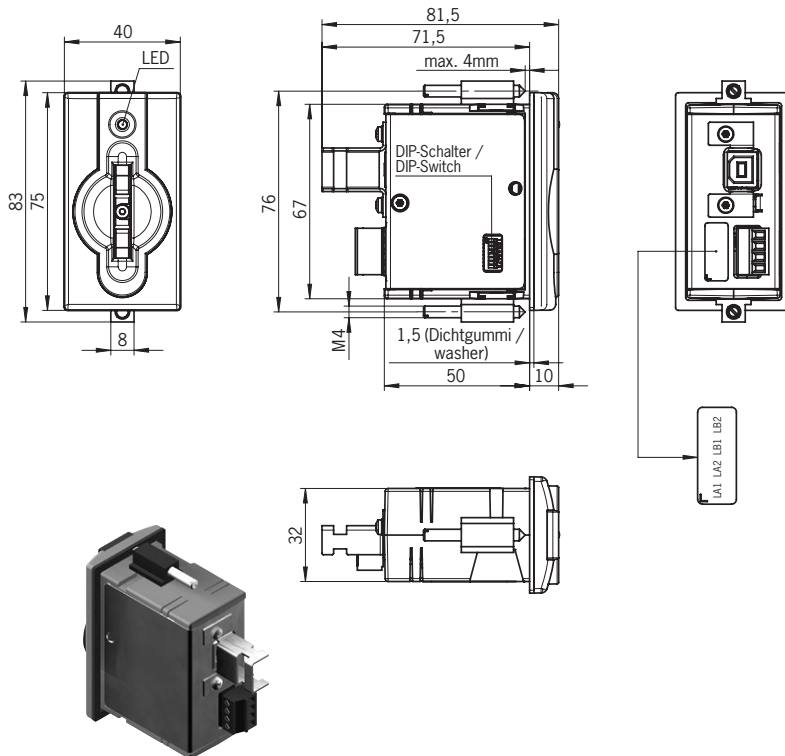
Designation	Item	Order no.
Electronic-Key adapter with USB interface	EKS-A-IUX-G01-ST01	092750

Electronic-Key adapter with USB interface FSA version



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to PC. Interfacing via ActiveX® module in Windows®
- ▶ Virtual serial COM port. Communication identical to EKS serial
- ▶ Additional integration in the safety system

Technical data

General parameters		Value			Unit
		min.	typ.	max.	
Electronic-Key adapter with USB interface (order no. 092750) on page 8					
Parameters for floating semiconductor switching contacts LA and LB					
Connection for switching contacts		Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA, LB)			24	30	V
Switching current per contact (with overload protection)		1	10	50	mA
Output voltage U_A (LA, LB) in switched state		$U \times 0.9$		U	V
Resistance in switched state			35		Ohm
Capacitive load				1	μ F
Utilization category acc. to EN IEC 60947-5-2		AC-12 AC-15 DC-12 DC-13	50 mA/24 V		
Reliability values according to EN ISO 13849-1 (only FSA version)					
Category (with connected safe evaluation)			3		
MTTFd	Evaluation of data channel and switching contact LA		416		years
	Evaluation of data channel and both switching contacts LA and LB		803		years
DC			92		%

Ordering table

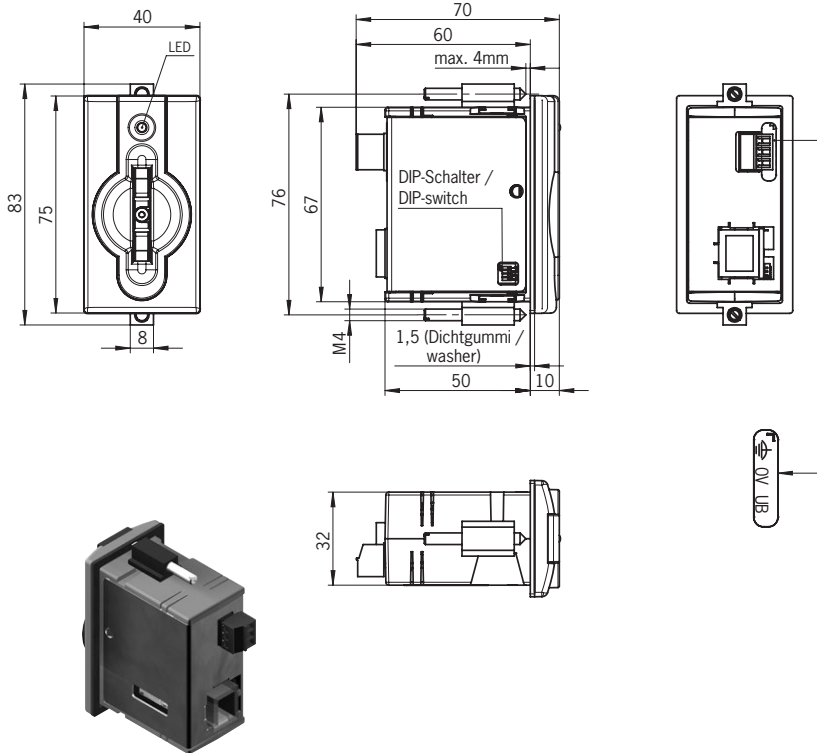
Designation	Item	Order no.
Electronic-Key adapter with USB interface FSA version	EKS-A-IUXA-G01-ST01/04	098513

Electronic-Key adapter with Ethernet TCP/IP interface



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to PC. Interfacing via ActiveX® module in Windows®
- ▶ Remote installation
- ▶ Connection to control systems for special applications

Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529	IP 67 in mounted condition			
Ambient temperature at $U_B = DC 24 V$	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Connection for power supply	Plug-in connection terminal, 3-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)	20	24	28	V DC
Current consumption I_B			150	mA
Interface, data transfer				
Interface to the PC or to the control system	Industrial Ethernet (IEEE 802.3)			
Transfer protocol	TCP/IP			
Data transfer rate (full duplex)		10/100		Mbit/s
Connection for Ethernet interface	1 x RJ45 socket			
Data line	2 x 2 twisted-pair copper wire, screened; min. category 5			
Cable length			100	m
LED indicator	Green: "Ready" (in operation) Yellow: "Electronic-Key active" * Red: "Error"			

* The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.

Ordering table

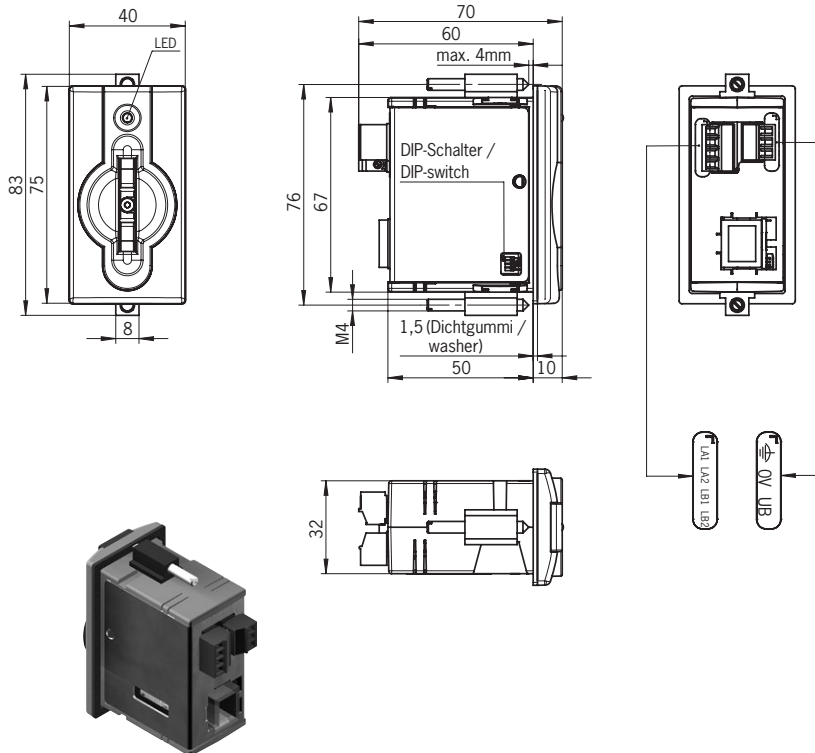
Designation	Item	Order no.
Electronic-Key adapter with Ethernet TCP/IP interface	EKS-A-EX-G01-ST02/03	100401

Electronic-Key adapter with Ethernet TCP/IP interface FSA version



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to PC. Interfacing via ActiveX® module in Windows®
- ▶ Remote installation
- ▶ Connection to control systems for special applications
- ▶ Additional integration in the safety system

Technical data

General parameters		Value			Unit
		min.	typ.	max.	
See Electronic-Key adapter with Ethernet TCP/IP interface (order no. 100401) on page 10					
Parameters for floating semiconductor switching contacts LA and LB					
Connection for switching contacts		Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA, LB)			24	30	V
Switching current per contact (with overload protection)		1	10	50	mA
Output voltage U_A (LA, LB) in switched state		$U \times 0.9$		U	V
Resistance in switched state			35		Ohm
Capacitive load				1	μ F
Utilization category acc. to EN IEC 60947-5-2		AC-12 AC-15 DC-12 DC-13	50 mA/24 V		
Reliability values according to EN ISO 13849-1 (only FSA version)					
Category (with connected safe evaluation)			3		
MTTFd	Evaluation of data channel and switching contact LA		416		years
	Evaluation of data channel and both switching contacts LA and LB		803		years
DC			92		%

Ordering table

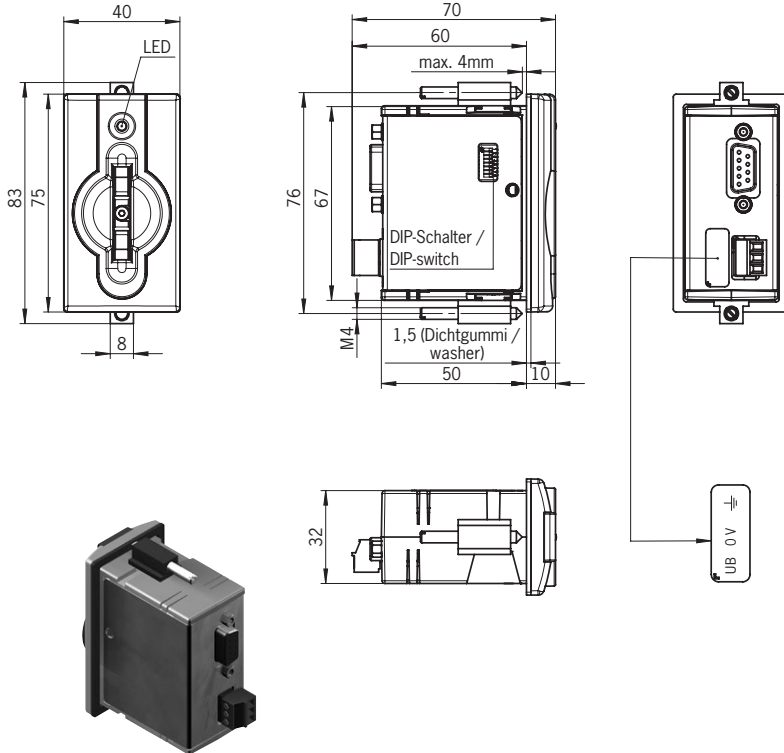
Designation	Item	Order no.
Electronic-Key adapter with Ethernet TCP/IP interface FSA version	EKS-A-IXA-G01-ST02/03/04	099265

Electronic-Key adapter with PROFIBUS DP interface



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to bus master of a control system. Interfacing via GSD file
- ▶ Remote installation

Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529	IP 67 in mounted condition			
Ambient temperature at $U_B = DC 24 V$	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Connection for power supply	Plug-in connection terminal, 3-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)	20	24	28	V DC
Current consumption I_B			150	mA
Interface, data transfer				
Interface to the PC or to the control system	RS485			
Address range	0 ... 126 (address selectable via DIP switch)			
Transfer protocol	PROFIBUS according to IEC 61158/IEC 61784-1			
Data transfer rate	9.6/19.2/45.45/93.75/187.5/500			kbps
	1.5/3/6/12			Mbit/s
Connection for PROFIBUS DP	Socket Sub-D 9-pin			
Cable length max.	100 ... 1200 according to PROFIBUS DP, depending on data transfer			m
LED indicator	Green: "Ready" (in operation) Yellow: "Electronic-Key active" * Red: "Error"			

* The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.

Ordering table

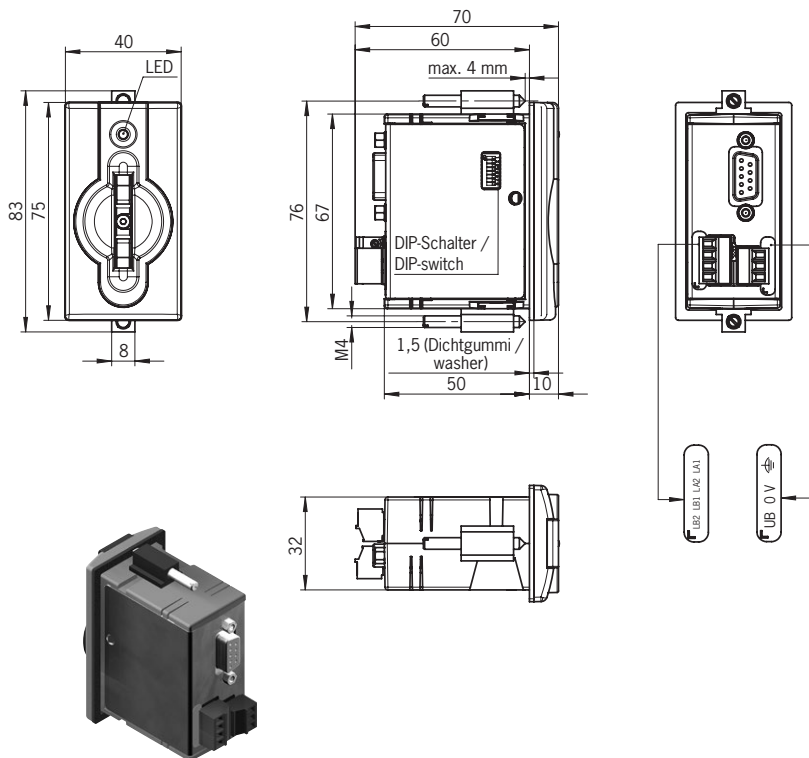
Designation	Item	Order no.
Electronic-Key adapter with PROFIBUS DP interface	EKS-A-IDX-G01-ST09/03	084800

Electronic-Key adapter with PROFIBUS DP interface FSA version



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to bus master of a control system. Interfacing via GSD file
- ▶ Remote installation
- ▶ Additional integration in the safety system

Technical data

General parameters		Value			Unit
		min.	typ.	max.	
See Electronic-Key adapter with PROFIBUS DP interface (order no. 084800) on page 12					
Parameters for floating semiconductor switching contacts LA and LB					
Connection for switching contacts		Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA, LB)			24	30	V
Switching current per contact (with overload protection)		1	10	50	mA
Output voltage U_A (LA, LB) in switched state		$U \times 0.9$		U	V
Resistance in switched state			35		Ohm
Capacitive load				1	μ F
Utilization category acc. to EN IEC 60947-5-2		AC-12 AC-15 DC-12 DC-13	50 mA/24 V		
Reliability values according to EN ISO 13849-1 (only FSA version)					
Category (with connected safe evaluation)		3			
MTTFd	Evaluation of data channel and switching contact LA	416			years
	Evaluation of data channel and both switching contacts LA and LB	803			years
DC		92			%

Ordering table

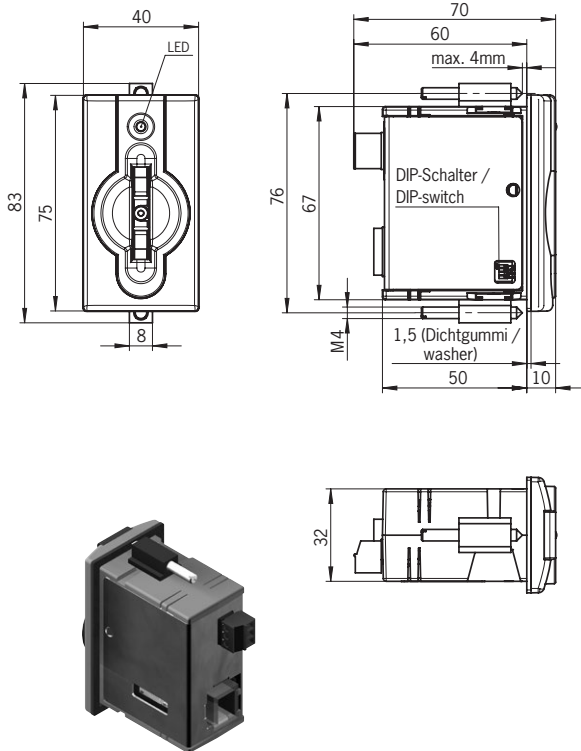
Designation	Item	Order no.
Electronic-Key adapter with PROFIBUS DP interface FSA version	EKS-A-IDXA-G01-ST09/03/04	100378

Electronic-Key adapter with PROFINET IO interface



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to control system. Interfacing via GSDML file
- ▶ Remote installation

Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529	IP 67 in mounted condition			
Ambient temperature at $U_B = DC 24 V$	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Connection for power supply	Plug-in connection terminal, 3-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)	20	24	28	V DC
Current consumption I_B			150	mA
Interface, data transfer				
Interface to the PC or to the control system	Industrial Ethernet (IEEE 802.3)			
Transfer protocol	PROFINET acc. to IEC 61158 / IEC 61784-1 and -2			
Data transfer rate (full duplex)		10/100		Mbit/s
Connection for Ethernet interface	1 x RJ45 socket			
Data line	2 x 2 twisted-pair copper wire, screened; min. category 5			
Cable length			100	m
LED indicator	Green: "Ready" (in operation) Yellow: "Electronic-Key active" * Red: "Error"			

* The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.

Ordering table

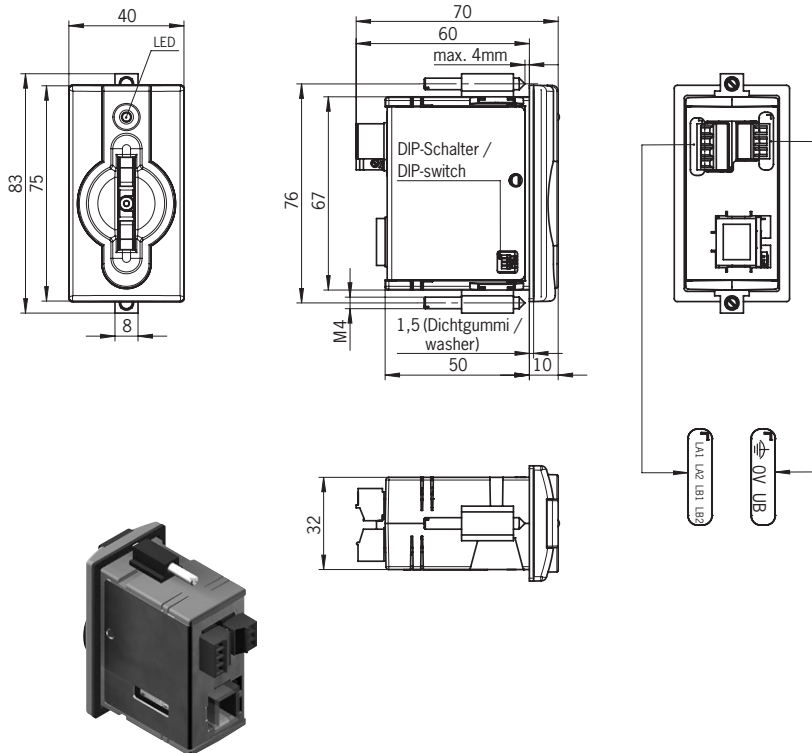
Designation	Item	Order no.
Electronic-Key adapter with PROFINET IO interface	EKS-A-IX-G01-ST02/03	106305

Electronic-Key adapter with PROFINET IO interface FSA version



Dimension drawing

Dimensions in mm



Typical applications

- ▶ Connection to control system. Interfacing via GSDML file
- ▶ Remote installation
- ▶ Additional integration in the safety system

Technical data

General parameters		Value			Unit
		min.	typ.	max.	
See Electronic-Key adapter with PROFINET IO interface (order no. 106305) on page 14					
Parameters for floating semiconductor switching contacts LA and LB					
Connection for switching contacts		Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA, LB)			24	30	V
Switching current per contact (with overload protection)		1	10	50	mA
Output voltage U_A (LA, LB) in switched state		$U \times 0.9$		U	V
Resistance in switched state			35		Ohm
Capacitive load				1	μ F
Utilization category acc. to EN IEC 60947-5-2		AC-12 AC-15 DC-12 DC-13	50 mA/24 V		
Reliability values according to EN ISO 13849-1 (only FSA version)					
Category (with connected safe evaluation)			3		
MTTFd	Evaluation of data channel and switching contact LA		416		years
	Evaluation of data channel and both switching contacts LA and LB		803		years
DC			92		%

Ordering table

Designation	Item	Order no.
Electronic-Key adapter with PROFINET IO interface FSA version	EKS-A-IIXA-G01-ST02/03/04	106306

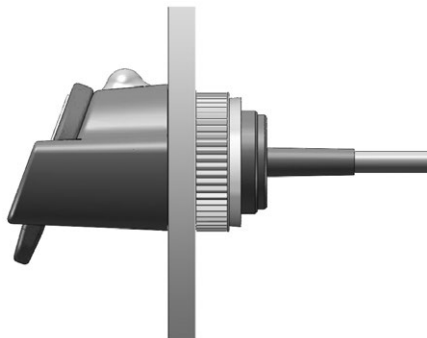
EKS read/write station in modular version

Here, the Electronic-Key adapter is mounted spatially separate from the electronics. The modular Electronic-Key adapter allows the Electronic-Key to be recognized at the front upon approach, and the Electronic-Key can also be placed by hanging it if necessary. With the modular design, the electronics are accommodated in a separate interface adapter mounted in the control cabinet or on a mounting rail, for example.

The shallow installation depth of the FHM Electronic-Key adapter permits installation in flat control panels as well. Since this version fits in a $\varnothing 22.5$ mm hole, it is often the simplest solution for retrofitting in particular.

The Electronic-Key adapter was designed for applications in hygienically sensitive areas, with simple cleaning being of primary importance here. The high-molecular-weight plastic also permits use in the food industry.

Due to the transfer of energy and data without using any contacts and the special design, this Electronic-Key adapter is designed with a very high degree of protection suitable for industry from the access side. It is fastened by means of a central nut from the rear side of the panel to exclude unauthorized tampering from the operator side.



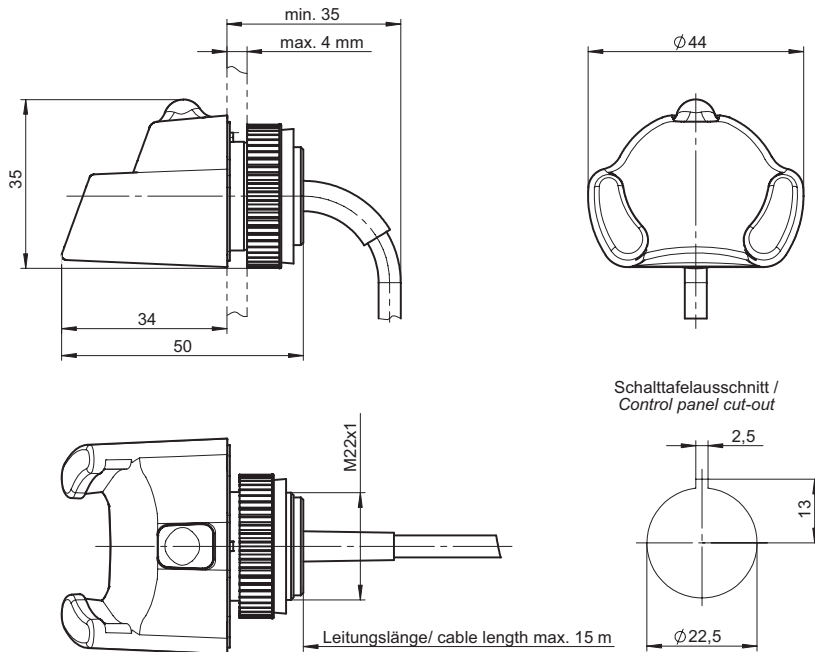
The special features and advantages of the **modular Electronic-Key adapter**:

- ▶ Key is held or inserted
- ▶ Small design for installations where there is little space
- ▶ Low installation depth
- ▶ Installation in standard assembly hole $\varnothing 22.5$ mm
- ▶ Closed design, rounded contours for hygienic areas
- ▶ Plastic with high resistance to media
- ▶ Protection against tampering: fastened using central nut from rear side of the panel
- ▶ Very robust housing for use in extremely harsh environments
- ▶ Flat seal covered by housing under mounting surface
- ▶ Degree of protection: IP 65, IP 67, IP 69K (installed)

Electronic-Key adapter Front hook modular FHM

Dimension drawing

Dimensions in mm



Typical applications

- ▶ Usage in conjunction with modular interface adapter

Important:

- ▶ A complete read/write station comprises an Electronic-Key adapter FHM and a modular interface adapter

Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PVDF GF30, gray)			
Degree of protection acc. to EN 60529	IP 65, IP 67, IP 69K in installed state			
Ambient temperature	- 20		+ 70 / + 100*	°C
Assembly hole	Ø 22.5			mm
Connection	Connection cable 2 m with flying lead or connection cable 0.13 m with plug connector M8, 4-pin			
Connection cable length	2, 5, 10, 15			m
Connection cable cross-section	4 x 0.25 screened			mm ²
Connection cable outer sheath	PVC			

* This is not an ambient temperature for operation. It is valid for a time of no more than 3 minutes, e.g. for cleaning purposes. The LED signaling is described with the interface adapter.

Ordering table

Designation	Item	Order no.
Electronic-Key adapter EKS FHM, connection cable 2 m with flying lead	EKS-A-SFH-G30-2000	106585
... alternative ...		
Electronic-Key adapter EKS FHM, connection cable 0.13 m with M8 male plug	EKS-A-SFH-G30-ST150	116118
Connection cable with M8 female plug with flying lead, required for order no. 116118	Cable length 2 m	C-M08F04-04X025PV02,0-ES 084641
	Cable length 5 m	C-M08F04-04X025PV05,0-ES 084642
	Cable length 10 m	C-M08F04-04X025PV10,0-ES 084643
	Cable length 15 m	C-M08F04-04X025PV15,0-ES 084644

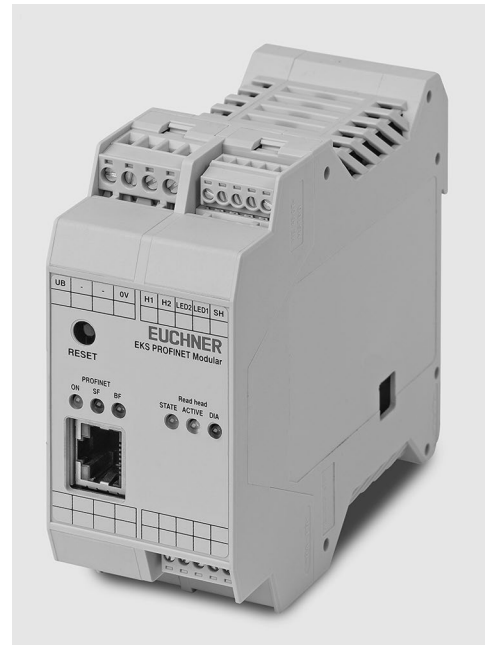
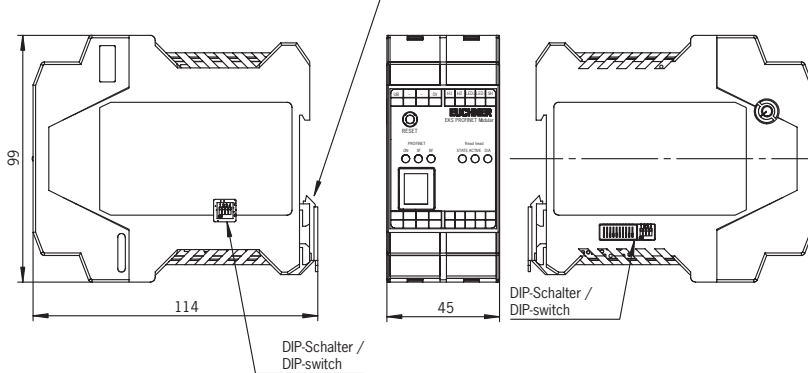
Modular interface adapter with PROFINET IO interface



Dimension drawing

Dimensions in mm

Passend für Tragschiene 35 mm nach DIN EN 60715 TH35 / suitable for mounting rail 35 mm acc. to DIN EN 60715 TH35



Important:

- ▶ The plug-in connection terminals are not included with the interface adapter and must be ordered separately
- ▶ A complete read/write station comprises an Electronic-Key adapter FHM and a modular interface adapter

Typical applications

- ▶ Usage in conjunction with Electronic-Key adapter FHM
- ▶ Connection to control system. Interfacing via GSDML file
- ▶ Remote installation

Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6.6, gray)			
Ambient temperature at $U_B = DC 24 V$	0		+ 55	°C
Mounting	Mounting rail 35 mm according to DIN EN 60715 TH35			
Key adapter connection	1 Electronic-Key adapter with max. 15 m connection cable			
Connection for power supply and Electronic-Key adapter	Plug-in connection terminal, 4-pin and 5-pin with screw or spring terminal			
Operating voltage U_B (regulated, residual ripple < 5%)	20	24	28	V DC
Current consumption I_B			110	mA
Interface, data transfer				
Interface to the PC or to the control system	Industrial Ethernet (IEEE 802.3)			
Transfer protocol	PROFINET acc. to IEC 61158 / IEC 61784-1 and -2			
Data transfer rate (full duplex)		10/100		Mbit/s
Connection for Ethernet interface	1 x RJ45 socket			
Data line	2 x 2 twisted-pair copper wire, screened; min. category 5			
Cable length			100	m
LED indicator read head	Green (STATE): "Ready" (in operation) Yellow (ACTIVE): "Electronic-Key active" * Red (DIA): "Error"			

* The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.

Ordering table

Designation	Item	Order no.
Interface adapter with PROFINET IO interface	EKS-A-AIX-G18	122352
Two plug-in connection terminals with screw terminals (complete set for order no. 122352)	AC-SC-04/05-V2	125543
Two plug-in connection terminals with spring terminal (complete set for order no. 122352)	AC-CC-04/05-V2	125548

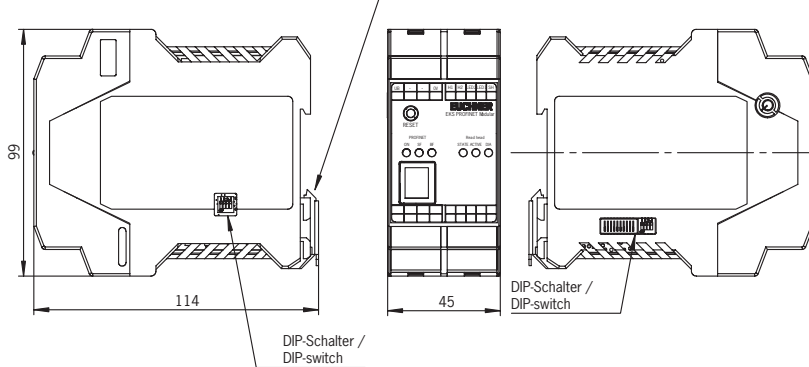
Modular interface adapter with PROFINET IO interface FSA version



Dimension drawing

Dimensions in mm

Passend für Tragschiene 35 mm nach DIN EN 60715 TH35 / suitable for mounting rail 35 mm acc. to DIN EN 60715 TH35



Important:

- ▶ The plug-in connection terminals are not included with the interface adapter and must be ordered separately
- ▶ A complete read/write station comprises an Electronic-Key adapter FHM and a modular interface adapter

Typical applications

- ▶ Usage in conjunction with Electronic-Key adapter FHM
- ▶ Connection to control system. Interfacing via GSDML file
- ▶ Remote installation
- ▶ Additional integration in the safety system

Technical data

General parameters		Value			Unit
		min.	typ.	max.	
See modular interface adapter with PROFINET IO interface (order no. 122352) on page 18					
Parameters for floating semiconductor switching contact LA					
Connection for switching contact		Plug-in connection terminal, 5-pin with screw or spring terminal			
Power supply U for load (LA)			24	30	V
Switching current (with overload protection)		1	10	50	mA
Output voltage U_A (LA) in switched state		$U \times 0.9$		U	V
Resistance in switched state			35		Ohm
Capacitive load				1	μ F
Utilization category acc. to EN IEC 60947-5-2		AC-12 AC-15 DC-12 DC-13	50 mA/24 V		
Reliability values according to EN ISO 13849-1 (only FSA version)					
Category (with connected safe evaluation)		3			
MTTFd Evaluation of data channel and switching contact LA		416			years
DC		92			%

Ordering table

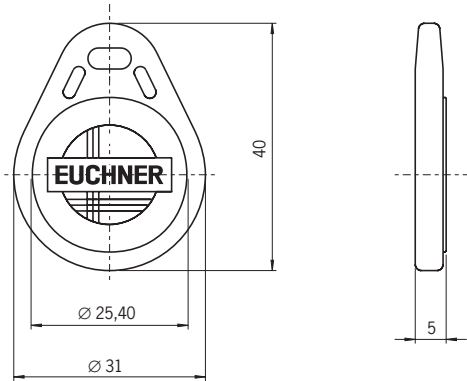
Designation	Item	Order no.
Modular interface adapter with PROFINET IO interface FSA version	EKS-A-AIXA-G18	122353
Three plug-in connection terminals with screw terminal (complete set for order no. 122353)	AC-SC-04/05-V3	125528
Three plug-in connection terminals with spring terminal (complete set for order no. 122353)	AC-CC-04/05-V3	125529

Electronic-Key read/write

- ▶ Memory 116 bytes E²PROM (programmable) plus 8 bytes ROM (serial number)

Dimension drawing

Dimensions in mm



Special features

- ▶ The Electronic-Key contains a unique 8-byte serial number. This number is written by laser during the Electronic-Key production process and is stored absolutely indestructibly. The serial number is used for secure distinction of every single Electronic-Key.

Electronic-Key memory structure

	E ² PROM (programmable)					ROM (serial number)		
Byte no. [dec]	0	1	...	114	115	116	...	123
Byte no. [hex]	00	01	...	72	73	74	...	7B
	Quantity: 116 bytes					Quantity: 8 bytes		

Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Memory capacity (read/write)		116		bytes
Serial number (read only)		8		bytes
Power supply	Inductive via Electronic-Key adapter			
Housing	Plastic PC, ABS			
Degree of protection acc. to EN 60529	IP 67			
Ambient temperature	- 20		+ 60	°C
Number of read cycles	Not limited			
Number of write cycles	100,000			cycles
Data retention time (at T = + 55°C)	10			years
Memory organization				
Write	Only possible in 4-byte blocks			
Read	Possible byte by byte			

Ordering table

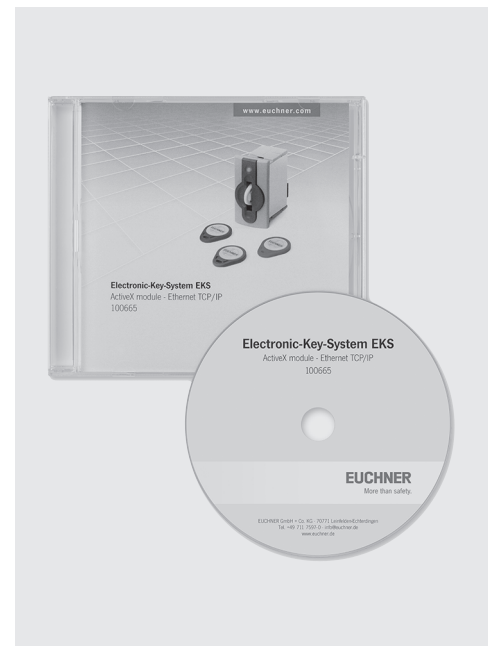
Designation	Color	Item	Order no.
Electronic-Key read/write with 116 bytes read/write memory	Red	EKS-A-K1RDWT32-EU	077859
	Black	EKS-A-K1BKWT32-EU	084735
	Blue	EKS-A-K1BUWT32-EU	091045
	Green	EKS-A-K1GNWT32-EU	094839
	Yellow	EKS-A-K1YEWT32-EU	094840
	White	EKS-A-K1WHWT32-EU	123097
	Orange	EKS-A-K1OGWT32-EU	123098

EKS ActiveX® module

- ▶ **Software for integration in user programs**

Typical applications

- ▶ Windows® PC-based user software
- ▶ EKS with serial interface on the PC
- ▶ EKS with USB interface on the PC
- ▶ EKS with Ethernet TCP/IP interface on the PC



Notice:

- ▶ The ActiveX® module is **not necessary** for the operation of the Transponder Coding (TC) or Electronic-Key-Manager (EKM) software

Product description

An EKS ActiveX® module is protocol driver software. Here the commands for the lower protocol level for the data communication are processed by this ActiveX® software component of standardized usage. An ActiveX® module can only be used with user programs that support ActiveX® in Microsoft Windows®. EKS can thus be used, for example, in conjunction with user software for process visualization.

Overview

To suit the different transfer protocols, we offer two different ActiveX® modules. Usage from the point of view of the programmer is however very similar.

For the EKS Electronic-Key adapter with serial RS232/RS422 and USB interface:

- ▶ Data communication based on the transfer protocol 3964R

For the EKS Electronic-Key adapter with Ethernet TCP/IP interface:

- ▶ Data communication based on the transfer protocol Ethernet TCP/IP

System requirements

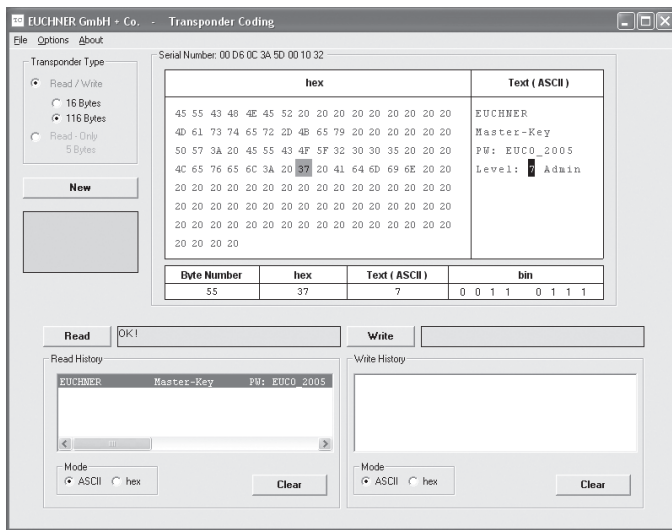
- ▶ Standard PC with Windows® XP/Server 2003/Server 2008 (32 and 64-bit)/Windows® 7 (32 and 64-bit)/Server 2008 R2

Ordering table

Designation		Order no.
Software, ActiveX® module serial / USB	on CD	098708
Software, ActiveX® module Ethernet TCP/IP	on CD	100665

Transponder Coding (TC)

- ▶ Software for straightforwardly reading and writing the Electronic-Keys



Product description

The Transponder Coding (TC) software is a simple hex/ASCII editor that can be used to read and write the Electronic-Key data on the PC. The software can be used immediately after installation and configuration of the interface parameters. In comparison, it is necessary to first prepare an application for the Electronic-Key-Manager (EKM) software.

Overview

- ▶ Display of the programmed Electronic-Key data in ASCII and hex view as well as the serial number in hex view
- ▶ Byte-wise editing of the Electronic-Key data
- ▶ Storage of the Electronic-Key data as ASCII or hex file

System requirements

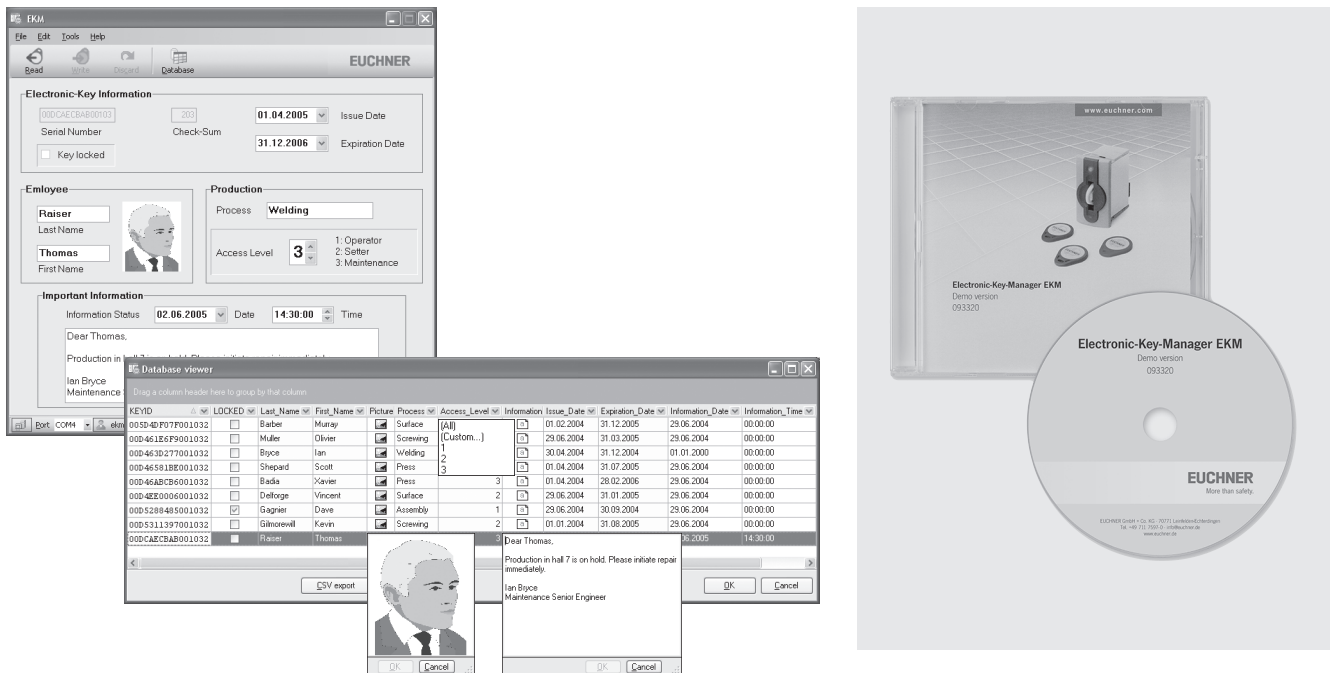
- ▶ Standard PC with Windows® XP/Server 2003/Server 2008 (32 and 64-bit)/Windows® 7 (32 and 64-bit)/Server 2008 R2
- ▶ Operation of the EKS Electronic-Key adapter with serial or USB interface

Ordering table

Designation		Order no.
Transponder Coding software	on CD	067190

Electronic-Key-Manager (EKM)

- ▶ Software for key management with input screen and database that can be configured as required



Product description

The Electronic-Key-Manager (EKM) is a flexible software package for writing and managing the Electronic-Keys on the PC. All Electronic-Keys and their contents are managed in a database. The freely programmable memory on the Electronic-Key can be allocated to the specific database fields. The database fields and the input screen can be configured as required. Editing permissions within EKM can be assigned using the EKM user manager. EKM can also be integrated into an existing EKS environment. Example databases that can be edited are included on the CD. For all versions the following applies:

- ▶ Software and documentation in German and English
- ▶ A prepared input screen and database can be exchanged between all EKM versions

Overview of demo version

- ▶ Local input screen and access to database (will only run on one PC)
- ▶ Database import/export function in csv format, locally and in the network
- ▶ Runtime limitation

Overview of Light version

- ▶ Local input screen, no access to database and no database import/export function (will only run on one PC)

Overview of single-user version

- ▶ Local input screen and access to database (will only run on one PC)
- ▶ Database import/export function in csv format, locally and in the network

Overview of full version

- ▶ Input screen and access to central database via client/server architecture in the network
- ▶ Database import/export function in csv format, locally and in the network

System requirements

- ▶ Standard PC with Windows® XP/Server 2003/Server 2008 (32 and 64-bit)/Windows® 7 (32 and 64-bit)/Server 2008 R2
- ▶ Operation of the EKS Electronic-Key adapter with serial or USB interface

Ordering table

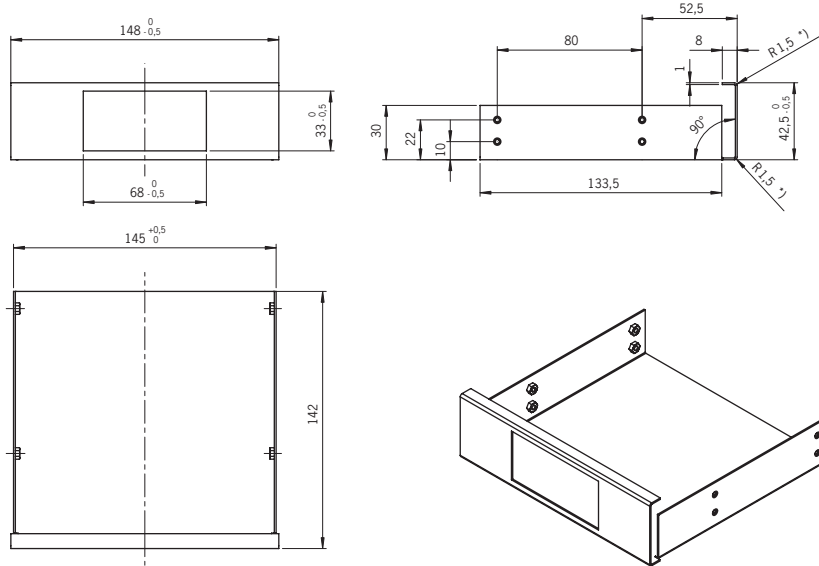
Designation		Order no.
Electronic-Key-Manager software, demo version	on CD	093320
Electronic-Key-Manager software, <i>Light</i> version	on CD	111410
Electronic-Key-Manager software, single-user version	on CD	098578
Electronic-Key-Manager software, full version	on CD	093322

Accessories

- ▶ PC mounting frame for 5.25" drive bay

Dimension drawing

Dimensions in mm



Product description

For installing the EKS Electronic-Key adapter in a PC.

- ▶ Dimensions: 148 mm x 42.5 mm x 142 mm (suitable for 5.25" drive bay)
- ▶ Housing: sheet steel 1 mm according to EN 10111
- ▶ Surface: front signal black matt RAL 9004
- ▶ Incl. 4 fixing screws

As an option a connection cable is available for the connection from the USB Electronic-Key adapter to the internal USB connection on the motherboard.

Ordering table

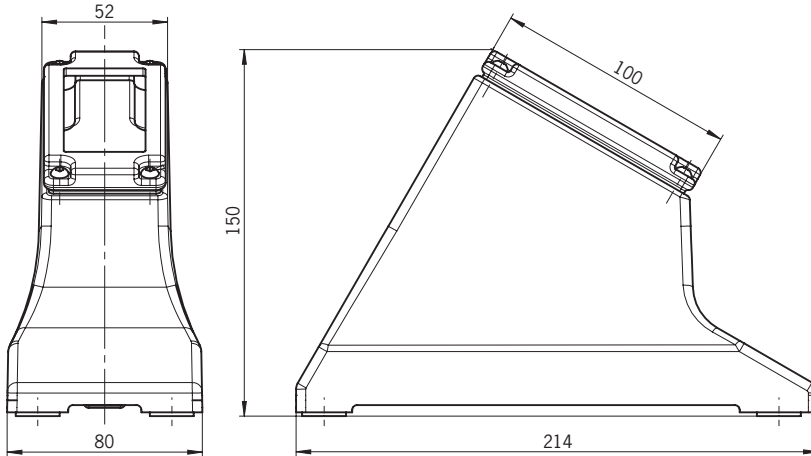
Designation	Order no.
PC mounting 5.25" for EKS Electronic-Key adapter	093615
Internal USB connection cable	095633

Accessories

► Desktop case

Dimension drawing

Dimensions in mm



Typical applications

- Setting up a programming station for key management on the desk
- EKS data entry station on desktop for which a degree of protection is not required

Example for programming station

- EKS Electronic-Key adapter with USB interface in the desktop case at the PC

Product description

For installing the EKS Electronic-Key adapter and for placing on the desk

- Installation of the compact version of the Electronic-Key adapter (all interfaces)
- Easy mounting from above in removable cover (2-piece housing, bottom open)
- Strain relief for connection cable
- Dimensions: 214 mm x 150 mm x 80 mm
- Mounting cut-out 33 mm x 68 mm according to DIN 43700
- Weight: approx. 1 kg
- Housing: sand-cast aluminum
- Surface: anthracite painted
- Including mounting parts (**notice:** screw clamp elements are included with the Electronic-Key adapter)

Ordering table

Designation	Order no.
Desktop case	113106

Software and user manuals

In the following tables you can see which documents and which software components may be relevant or are compatible in conjunction with the device interfaces. The device manuals are only available as a download. Software is provided to some extent on CD with the order and to some extent for download.



► Electronic-Key adapter with serial interface

Designation		Order no.
Manual Electronic-Key Adapter with serial Interface	pdf file as download	088796
Manual Software ActiveX® Module serial / USB	pdf file as download	098655
Software, ActiveX® module serial / USB	on CD with the order	098708
Transponder Coding software	on CD with the order	067190
Electronic-Key-Manager software, demo version	on CD with the order	093320
Electronic-Key-Manager software, Light version	on CD with the order	111410
Electronic-Key-Manager software, single-user version	on CD with the order	098578
Electronic-Key-Manager software, full version	on CD with the order	093322

Note on the connection cable

A commercially available screened connection cable is used to connect the **EKS** Electronic-Key adapter via the serial interface. On the **EKS** end the cable must have a SUB-D plug (9-pin) and on the PC/control system end a SUB-D socket (9-pin), with 1 to 1 connection of the contacts. Screws are required at both ends for strain relief. The maximum cable length is 5 m.



► Electronic-Key adapter with USB interface

Designation		Order no.
Manual Electronic-Key Adapter EKS and EKS FSA with USB Interface	pdf file as download	094485
Manual Software ActiveX® Module serial / USB	pdf file as download	098655
Software, ActiveX® module serial / USB	on CD with the order	098708
Software, USB driver	as download	094376
Transponder Coding software	on CD with the order	067190
Electronic-Key-Manager software, demo version	on CD with the order	093320
Electronic-Key-Manager software, Light version	on CD with the order	111410
Electronic-Key-Manager software, single-user version	on CD with the order	098578
Electronic-Key-Manager software, full version	on CD with the order	093322

Note on the connection cable

A commercially available, screened connection cable in accordance with USB 1.1 or USB 2.0 standard is used to connect the **EKS** Electronic-Key Adapter via the USB interface. On the **EKS** end the cable must have a USB plug of type B and on the PC end typically a USB plug of type A. The maximum cable length is 3 m.



► Electronic-Key adapter with Ethernet TCP/IP interface

Designation		Order no.
Manual Electronic-Key Adapter EKS and EKS FSA with Ethernet Interface	pdf file as download	100420
Manual Software ActiveX® Module Ethernet TCP/IP	pdf file as download	102030
Software, ActiveX® module Ethernet TCP/IP	on CD with the order	100665

Note on the connection cable

A commercially available, screened twisted-pair 100BaseTX connection cable in accordance with Cat5 or better is used to connect the **EKS** Electronic-Key Adapter via the Ethernet interface. On the **EKS** end the cable must have an RJ-45 plug. The maximum cable length is 100 m.



► **Electronic-Key adapter with PROFIBUS DP interface**

Designation		Order no.
Manual Electronic-Key Adapter EKS and EKS FSA with Profibus DP Interface	pdf file as download	092009
GSD file	as download	092054



► **Compact Electronic-Key adapter and modular read/write station with PROFINET IO interface**

Designation		Order no.
Manual EKS and EKS FSA with PROFINET Interface	pdf file as download	109283
GSDML file for compact Electronic-Key adapter	as download	109539
GSDML file for modular interface adapter	as download	126145

Note on the connection cable

A commercially available, screened twisted-pair 100BaseTX connection cable in accordance with Cat5 or better is used to connect the **EKS** Electronic-Key adapter or the interface adapter via the Ethernet interface. On the **EKS** end the cable must have an RJ-45 plug. The maximum cable length is 100 m.

Downloads available at www.euchner.de in the Service/Downloads/... area

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A series of 30 horizontal grey bars, evenly spaced, intended for writing notes. The bars span the width of the page, leaving a small margin on the left and right.

Representatives

International

Austria

EUCHNER GmbH
Süddruckgasse 4
2512 Tribuswinkel
Tel. +43 2252 42191
Fax +43 2252 45225
info@euchner.at

Benelux

EUCHNER (BENELUX) BV
Visschersbuurt 23
3356 AE Papendrecht
Tel. +31 78 615-4766
Fax +31 78 615-4311
info@euchner.nl

Brazil

EUCHNER Ltda
Av. Prof. Luiz Ignácio Anhaia Mello,
no. 4387
Vila Ema
São Paulo - SP - Brasil
CEP 03295-000
Tel. +55 11 29182200
Fax +55 11 23010613
euchner@euchner.com.br

Canada

IAC & Associates Inc.
2105 Fasan Drive
Oldcastle, ON NOR 1L0
Tel. +1 519 737-0311
Fax +1 519 737-0314
sales@iacnassociates.com

China

EUCHNER (Shanghai)
Trading Co., Ltd.
No. 15 building,
No. 68 Zhongchuang Road,
Songjiang
Shanghai, 201613, P.R.C
Tel. +86 21 5774-7090
Fax +86 21 5774-7599
info@euchner.com.cn

Czech Republic

EUCHNER electric s.r.o.
Videňská 134/102
61900 Brno
Tel. +420 533 443-150
Fax +420 533 443-153
info@euchner.cz

Denmark

Duelco A/S
Systemvej 8 - 10
9200 Aalborg SV
Tel. +45 7010 1007
Fax +45 7010 1008
info@duelco.dk

Finland

Sähkölehto Oy
Holkkitie 14
00880 Helsinki
Tel. +358 9 7746420
Fax +358 9 7591071
office@sahkolehto.fi

France

EUCHNER France S.A.R.L.
Parc d'Affaires des Bellevues
Allée Rosa Luxembourg
Bâtiment le Colorado
95610 ERAGNY sur OISE
Tel. +33 1 3909-9090
Fax +33 1 3909-9099
info@euchner.fr

Hungary

EUCHNER Ges.mbh
Magyarországi Fióktelep
FSD Park 2,
2045 Törökbalint
Tel. +36 2342 8374
Fax +36 2342 8375
info@euchner.hu

India

EUCHNER (India) Pvt. Ltd.
401, Bremen Business Center,
City Survey No. 2562,
University Road
Aundh, Pune - 411007
Tel. +91 20 64016384
Fax +91 20 25885148
info@euchner.in

Israel

Ilan & Gavish Automation Service Ltd.
26 Shenkar St. Qiryat Arie 49513
P.O. Box 10118
Petach Tikva 49001
Tel. +972 3 9221824
Fax +972 3 9240761
mail@ilan-gavish.com

Italy

TRITECNICA SpA
Viale Lazio 26
20135 Milano
Tel. +39 02 541941
Fax +39 02 55010474
info@tritecnica.it

Japan

EUCHNER Co., Ltd.
1662-3 Komakiharashinden
Komaki-shi, Aichi-ken
485-0012, Japan
Tel. +81 568 42 0157
Fax +81 568 42 0159
info@euchner.jp

Korea

EUCHNER Korea Co., Ltd.
115 Gasan Digital 2 - Ro
(Gasan-dong, Daeryung
Technotown 3rd Rm 810)
153 - 803 Kumchon-Gu, Seoul
Tel. +82 2 2107-3500
Fax +82 2 2107-3999
info@euchner.co.kr

Mexico

EUCHNER México S de RL de CV
Conjunto Industrial PK Co.
Carretera Estatal 431 km. 1+300
Ejido El Colorado, El Marqués
76246 Querétaro, México
Tel. +52 442 402 1485
Fax +52 442 402 1486
info@euchner.mx

Poland

ELTRON
Pl. Wolności 7B
50-071 Wrocław
Tel. +48 71 3439755
Fax +48 71 3441141
eltron@eltron.pl

Republic of South Africa

RUBICON
ELECTRICAL DISTRIBUTORS
4 Reith Street, Sidwell
6061 Port Elizabeth
Tel. +27 41 451-4359
Fax +27 41 451-1296
sales@rubiconelectrical.com

Romania

First Electric SRL
Str. Ritmului Nr. 1 Bis
Ap. 2, Sector 2
021675 Bucuresti
Tel. +40 21 2526218
Fax +40 21 3113193
office@firstelectric.ro

Russia

VALEX electro
Uliza Karjer dom 2, Str. 9, Etash 2
117449 Moskwa
Tel. +7 495 41196-35
Fax +7 495 41196-36
info@valex-electro.ru

Singapore

Sentronics
Automation & Marketing Pte Ltd.
Blk 3, Ang Mo Kio Industrial Park 2A
#05-06
Singapore 568050
Tel. +65 6744 8018
Fax +65 6744 1929
info@sentronics-asia.com

Slovakia

EUCHNER electric s.r.o.
Videňská 134/102
61900 Brno
Tel. +420 533 443-150
Fax +420 533 443-153
info@euchner.cz

Slovenia

SMM proizvodni sistemi d.o.o.
Jaskova 18
2000 Maribor
Tel. +386 2 4502326
Fax +386 2 4625160
franc.kit@smm.si

Spain

EUCHNER, S.L.
Gurutzegi 12 - Local 1
Polígono Belartza
20018 San Sebastian
Tel. +34 943 316-760
Fax +34 943 316-405
info@euchner.es

Sweden

Censit AB
Box 331
33123 Värnamo
Tel. +46 370 691010
Fax +46 370 18888
info@censit.se

Switzerland

EUCHNER AG
Falknisstrasse 9a
7320 Sargans
Tel. +41 81 720-4590
Fax +41 81 720-4599
info@euchner.ch

Taiwan

Daybreak Int'l (Taiwan) Corp.
3F, No. 124, Chung-Cheng Road
Shihlin 11145, Taipei
Tel. +886 2 8866-1234
Fax +886 2 8866-1239
day111@ms23.hinet.net

Turkey

EUCHNER Endüstriyel Emniyet
Teknolojileri Ltd. Şti.
Hattat Bahattin Sok.
Ceylan Apt. No. 13/A
Göztepe Mah.
34730 Kadıköy / Istanbul
Tel. +90 216 359-5656
Fax +90 216 359-5660
info@euchner.com.tr

United Kingdom

EUCHNER (UK) Ltd.
Unit 2 Petre Drive,
Sheffield
South Yorkshire
S4 7PZ
Tel. +44 114 2560123
Fax +44 114 2425333
sales@euchner.co.uk

USA

EUCHNER USA Inc.
6723 Lyons Street
East Syracuse, NY 13057
Tel. +1 315 701-0315
Fax +1 315 701-0319
info@euchner-usa.com

EUCHNER USA Inc.
Detroit Office
130 Hampton Circle
Rochester Hills, MI 48307
Tel. +1 248 537-1092
Fax +1 248 537-1095
info@euchner-usa.com

Germany

Augsburg

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Julius-Spokojny-Weg 8
86153 Augsburg
Tel. +49 821 56786540
Fax +49 821 56786541
peter.klopper@euchner.de

Chemnitz

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Am Vogelherd 2
09627 Bobritzsch-Hilbersdorf
Tel. +49 37325 906000
Fax +49 37325 906004
jens.zehrtner@euchner.de

Düsseldorf

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Tippgarten 3
59427 Unna
Tel. +49 2308 9337284
Fax +49 2308 9337285
christian.schimke@euchner.de

Essen/Dortmund

Thomas Kreißl
fördern - steuern - regeln
Hackenbergweg 8a
45133 Essen
Tel. +49 201 84266-0
Fax +49 201 84266-66
info@kreissl-essen.de

Freiburg

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Steige 5
79206 Breisach
Tel. +49 7664 403833
Fax +49 7664 403834
peter.seifert@euchner.de

Lübeck

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Am Stadtrand 13
23556 Lübeck
Tel. +49 451 88048371
Fax +49 451 88184364
martin.pape@euchner.de

Berlin

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Ulmenstraße 115a
12621 Berlin
Tel. +49 30 50508214
Fax +49 30 56582139
alexander.walz@euchner.de

Nürnberg

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Steiner Straße 22a
90522 Oberasbach
Tel. +49 911 6693829
Fax +49 911 6696722
ralf.paulus@euchner.de

Stuttgart

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Kohlhammerstraße 16
70771 Leinfelden-Echterdingen
Tel. +49 711 7597-0
Fax +49 711 7597-303
oliver.laier@euchner.de
uwe.kupka@euchner.de

Wiesbaden

EUCHNER GmbH + Co. KG
Ingenieur- und Vertriebsbüro
Adolfsallee 3
68185 Wiesbaden
Tel. +49 611 98817644
Fax +49 611 98895071
giancarlo.pasquesi@euchner.de



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EUCHNER GmbH + Co. KG

Kohlhammerstraße 16
70771 Leinfelden-Echterdingen
Germany
Tel. +49 711 7597-0
Fax +49 711 753316
info@euchner.de
www.euchner.com

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